

DOCUMENTED BRIEFING

RAND

Ensuring Adequate Intelligence Support for the Acquisition of New Weapon Systems

Myron Hura, Gary McLeod



National Security Research Division

19950417 136

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

The research described in this report was sponsored by the Community Management Staff, Contract No. 92-F143200-000.

RAND
Copyright © 1995

The RAND documented briefing series is a mechanism for timely, easy-to-read reporting of research that has been briefed to the client and possibly to other audiences. Although documented briefings have been formally reviewed, they are not expected to be comprehensive or definitive. In many cases, they represent interim work.

RAND is a nonprofit institution that helps improve public policy through research and analysis. RAND's publications do not necessarily reflect the opinions or policies of its research sponsors.

Published 1995 by RAND
1700 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138
RAND URL: <http://www.rand.org/>

To order RAND documents or to obtain additional information, contact Distribution Services: Telephone: (310) 451-7002; Fax: (310) 451-6915; Internet: order@rand.org.

DOCUMENTED BRIEFING

RAND

Ensuring Adequate Intelligence Support for the Acquisition of New Weapon Systems

Myron Hura, Gary McLeod

*Prepared for the
Community Management Staff*

National Security Research Division

Accesion For	
NTIS	CRA&I
DTIC	TAB
Unannounced	
Justification _____	
By _____	
Distribution / _____	
Availability Codes	
Dist	Avail and / or Special
A-1	

DISTRIBUTION STATEMENT A
Approved for public release:
Distribution Unlimited

CONTENTS

Preface	iii
Summary	vii
Acknowledgments	xiii
Acronyms	xv
1. INTRODUCTION	1
2. EXISTING INTELLIGENCE SUPPORT TO JROC AND DAB	5
3. "BOTTOM-UP" ALTERNATIVE TO IMPROVE INTELLIGENCE SUPPORT TO JROC AND DAB	21
4. "TOP-DOWN" ALTERNATIVES TO IMPROVE INTELLIGENCE SUPPORT TO JROC AND DAB	32
5. ASSESSMENT AND OBSERVATIONS	41
Bibliography	49

SUMMARY

Smarter and more accurate weapon systems (e.g., low observable aircraft and precision-guided weapons) are considered to be major force multipliers; however, they require specialized intelligence support. As discussed in our previous work (Hura and McLeod, 1993a, 1993b), standard intelligence products and services and current product dissemination timelines may be inadequate to support such weapons.¹ Should intelligence assets be enhanced or weapon performance expectations be reduced, or could the weapons be developed and operated in ways to compensate for the intelligence support shortfall, or perhaps operators have other ways to accomplish the missions? It is often difficult to answer such questions. We sought to determine why and suggest some remedies.

THE PROBLEM AND ITS CAUSES

Often, new weapon systems emerge in the operational environment without adequate planning for the integration of intelligence support. Some notable examples were the conventional variants of the Navy Tomahawk cruise missile, the F-117 stealth fighter, the LANTIRN navigation and targeting pod, and JSTARS aircraft.² Typically, top-level decisionmakers in the Department of Defense (DoD) weapon requirements and acquisition process do not have accurate and authoritative information on intelligence system capabilities or on weapon intelligence needs to ensure that weapons are properly supported.

A major factor in this situation is that a substantial fraction of all intelligence programs that support, or can support, military needs are national systems and, thus, not under the direct control of DoD, but rather

¹We define “standard” intelligence products and services as those for which a specific format, content, and accuracy have been agreed upon and that are produced or made available to operational commands according to specified guidelines. Basic target graphics, imagery products with relevant information about a target, are an example of standard intelligence products produced by the Defense Intelligence Agency. Because many Defense Mapping Agency (DMA) products and services are built from intelligence data sources, we also consider them as standard intelligence products and services (DMA, 1990).

²LANTIRN is an acronym for Low-Altitude Navigation and Targeting Infrared System for Night. JSTARS is an acronym for Joint Surveillance Target Attack Radar System.

under the control of the Director of Central Intelligence (DCI).³ Consequently, without authoritative inputs from the DCI about the capabilities and availability of existing and planned national intelligence assets that may support DoD systems, decisionmakers in the DoD weapon requirements and acquisition process cannot ensure adequate linkage of intelligence support for new weapons.

A second key problem is that weapon developers typically have an incentive to design their systems so that they will work with standard intelligence products or services. The incentive is that no extra cost will accrue to the weapon system program—the cost of standard products is included in the funding provided to the Intelligence Community. If the developed system does not satisfy the needs of the operators, the added costs for developing better intelligence support are not necessarily charged against the weapon program.

Third, no decisionmaker in the DoD or the Intelligence Community has the authority to ensure that total government cost is minimized while seeking the most economical combination of weapon design, intelligence system support, and concept of operations. Because the top-level decisionmaker of the Intelligence Community, the DCI, is not part of the military structure (by statute), the process for developing authoritative information and providing authoritative analysis of trade-offs is problematic. The DCI is not a member of, nor is he effectively represented on, the top-level decision bodies of the DoD requirements and acquisition process—the Joint Requirements Oversight Council (JROC) and the Defense Acquisition Board (DAB)—where trade-offs between weapon designs and operational concepts are typically made. Moreover, the DCI is not involved in the DoD Planning, Programming, and Budgeting System, which forms the basis for making informed affordability assessments and resource allocations decisions on defense acquisition programs.

³The DCI serves as head of the Intelligence Community (Congress, 1992). The term “Intelligence Community” includes the Office of the DCI; the Central Intelligence Agency; the National Security Agency; the Defense Intelligence Agency; the Central Imagery Office; the National Reconnaissance Office; other offices within the DoD for the collection of specialized national intelligence through reconnaissance programs; and the intelligence elements of the military services (Army, Navy, Air Force, Marine Corps), the Federal Bureau of Investigation, the Department of Treasury, the Department of Energy, and the Department of State. The term “national intelligence” refers to intelligence that pertains to the interest of more than one department or agency of the federal government.

Finally, an analytical framework for structuring and evaluating rational trade-offs between weapon system characteristics, alternative levels of intelligence support, and operational concepts does not exist. The weapon acquisition community, the Intelligence Community, and operators have not agreed upon the procedures, models, and personnel that should be used to support JROC and DAB decisionmakers in making the necessary trade-offs.

APPROACH TO ENSURE ADEQUATE INTELLIGENCE SUPPORT TO NEW WEAPONS

To ensure that adequate intelligence support is available to new weapons, effective interactions between weapon operators,⁴ the acquisition community (government acquisition organizations and contractors), and the Intelligence Community are required. These interactions must begin early in the acquisition cycle of the weapon system and must lead to effective trade-offs between weapon characteristics, alternative levels of intelligence support, and operational concepts. By this, we mean that the benefits and cost of providing better intelligence support need to be weighed against the cost of placing less stringent requirements on the technical characteristics of the weapons and vice versa. In examining trade-offs between weapons and intelligence, decisionmakers need to consider other options available to operators to execute the missions. For example, if the overall accuracy of an autonomously guided weapon depends on both the accuracy of the weapon's guidance system (which is the responsibility of the weapon developer) and the accuracy of the target's location (nominally provided by the Intelligence Community) and if the resultant combination does not satisfy an established criterion, for example, a stringent criterion of no collateral damage, operators may select other weapons, such as man-in-the-loop laser-guided weapons, to strike the target.

Decisionmakers of the three communities (operations, acquisition, and intelligence) need accurate information and unbiased, empirical analysis to make trade-offs between weapons, intelligence support, and operational concepts. Taking into consideration the distinct and separate responsibilities of the decisionmakers of the DoD JROC and DAB process

⁴In the broadest sense, we define weapon operators as those commands that actually employ weapons or that represent the interest of weapon operators. At the top level, unified and specified commands, military service chiefs, and the Joint Staff represent the interest of weapon operators. At a lower echelon, component commanders and major service commands represent the interest of weapon operators.

and the DCI, we believe that the proper approach to resolve the intelligence support problem is to incorporate, as a matter of routine, the consideration of existing and planned national intelligence systems in the DoD and DAB process. The data provided should be authoritative information from the DCI or his designated representative. Specifically, the information should include the capabilities and availability of existing and planned national intelligence assets (i.e., systems and personnel) and the incremental cost to DoD of using existing assets in new ways or adding requirements to planned assets.

OPTIONS FOR IMPROVING INTELLIGENCE SUPPORT

This research examined five options for improving intelligence support to the JROC and DAB: (1) expanded intelligence support plan (ISP), (2) Military Intelligence Board with expanded capabilities (MIB+), (3) Joint Precision Strike Integration Office, (4) Joint Warfighting Capability Assessment Team (JWCAT), and (5) Joint Review. Our qualitative assessment indicates that the expanded ISP, the JWCAT, the Joint Review, or combinations of JWCAT with the Joint Review or the MIB+,⁵ if properly structured, have the potential to provide satisfactory support to JROC and DAB decisionmakers for making rational trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts. This assumes that the analytical framework (procedures, models, and personnel) needed to examine those trade-offs is developed.

We note, however, that none of these options will improve intelligence support to new weapons if decisionmakers do not have the incentives to make the necessary trade-offs; presumably, current budgetary constraints now offer such incentives. Also, there are inherent difficulties in reaching an agreement on an optimal solution when the three different communities (operations, acquisition, and intelligence) each has its own objective functions and responsibilities. Moreover, because of the number of different organizations that need to interact and to be involved in the process, the process will, at times, be inefficient and imperfect. However, now is the time to improve the process, by selecting one of the preferred

⁵It appears that there is a current effort to implement one of these combinations. During the preparation of this report, we became aware of an initiative by the Director of the Defense Intelligence Agency to enlist analytical support from federally funded research and development centers to assist him and the MIB in their support of the various JWCATs (Clapper, 1994).

options or combinations listed above or another option not described,⁶ as long as the option provides the decisionmakers with the necessary information and analytical support to make trade-offs between weapon characteristics, alternative levels of intelligence support, and operational concepts.

⁶For example, one potential option not examined in this research is the newly established Defense Intelligence Executive Board (DIEB), which is the senior corporate advisory body to the Secretary of Defense for review and oversight of DoD intelligence programs and activities (Deutch, 1994a).

ACKNOWLEDGMENTS

The authors would like to thank Sean Roche of the Community Management Staff for his assistance in obtaining directives and documents necessary to complete this work, and for providing insights to the procedures and dynamics of several top-level Intelligence Community forums. We would also like to thank Captain Harry Ulrich (Navy), formerly of the Joint Staff; Major Michael Nostrand of Headquarters, Air Force; and Captain Michael Lancaster of the Air Force 497th Intelligence Group for their comments and suggestions on an earlier draft.

The encouragement and support of our RAND colleagues David Gompert and Eugene Gritton were essential to completing this research. We are also indebted to our RAND colleagues John Bondanella and Lucille Horgan for their useful insights and suggestions on this research. Of course, we alone are responsible for any errors of omission or commission.

ACRONYMS

ACAT	Acquisition category
ACMC	Assistant Commandant of the Marine Corps
ACSI	Assistant Chief of Staff for Intelligence (Air Force)
ADDO(MA)	Associate Deputy Director of Operations for Military Affairs (CIA)
ADM	Acquisition decision memorandum
AIA	Air Intelligence Agency
AF	Air Force
AF/IN	Air Force Assistant Chief of Staff for Intelligence (office symbol)
AFOTEC	Air Force Operational Test and Evaluation Center
AFSARC	Air Force Systems Acquisition Review Council
AF/XO	Air Force Deputy Chief of Staff for Plans and Operations (office symbol)
APB	Acquisition program baseline
ASD(C3I)	Assistant Secretary of Defense (C3I)
C3I	Command, control, communications, and intelligence
C3ISC	C3I Systems Committee
C4I	Command, control, communications, computers, and intelligence
CIA	Central Intelligence Agency
CINC	Commander in chief
CIO	Central Imagery Office
CMS	Community Management Staff
CNA	Center for Naval Analyses
COEA	Cost and operational effectiveness analysis
CONOPS	Concept of operations
CSAF	Chief of Staff of the Air Force
DAB	Defense Acquisition Board
DARO	Defense Airborne Reconnaissance Office
DASD(I&S)	Deputy Assistant Secretary of Defense for Intelligence and Security
DCI	Director of Central Intelligence
DCSINT	Deputy Chief of Staff for Intelligence (Army)

DEPSECDEF	Deputy Secretary of Defense
DIA	Defense Intelligence Agency
DIEB	Defense Intelligence Executive Board
DMA	Defense Mapping Agency
DMI	Defense Military Intelligence
DNI	Director of Naval Intelligence
DoD	Department of Defense
DoDD	DoD Directive
DoDI	DoD Instruction
DR&E	Defense Research and Engineering
DSPO	Defense Support Program Office
DTED	Digital Terrain Elevation Data
FY	Fiscal year
GDIP	General Defense Intelligence Program
HUMINT	Human source intelligence
IC/EXCOM	Intelligence Community Executive Committee
ICO	Intelligence counterpart officer
IDA	Institute for Defense Analyses
IMINT	Imagery intelligence
IPR	Intelligence production requirement
IPS	Integrated program summary
IPSG	Intelligence Program Support Group
ISP	Intelligence support plan
ISR	Intelligence, surveillance, and reconnaissance
ISWG	Intelligence support working group
J-2	The command senior intelligence officer
JDAM	Joint Direct Attack Munition
JMIP	Joint Military Intelligence Program
JPSIO	Joint Precision Strike Integration Office
JROC	Joint Requirements Oversight Council
JS	Joint Staff
JSOW	Joint Standoff Weapon
JSPO	Joint system program office
JSTARS	Joint Surveillance Target Attack Radar System
JWCAT	Joint warfighting capability assessment team
LANTIRN	Low-Altitude Navigation and Targeting Infrared System for Night
MAJCOM	Major command
MASINT	Measurement and signature intelligence
MC&G	Mapping, charting, and geodesy
MIB	Military Intelligence Board

MIB+	Military Intelligence Board (expanded capability)
MNS	Mission need statement
NAIC	National Air Intelligence Center
NFIP	National Foreign Intelligence Program
NSA	National Security Agency
ORD	Operational requirements document
OSD	Office of the Secretary of Defense
OT&E	Operational Test and Evaluation
PA&E	Program Analysis and Evaluation
PDUSD(A&T)	Principal Deputy Under Secretary of Defense for Acquisition and Technology
PGW	Precision-guided weapon
PMD	Program management directive
POM	Program objective memorandum
PPBS	Planning, Programming, and Budgeting System
RDT&E	Research, development, test, and evaluation
SAE	Service acquisition executive
SAF/AQ	Air Force Assistant Secretary for Acquisition (office symbol)
SAR	Special access required
SCI	Sensitive compartmented information
SECDEF	Secretary of Defense
SHAPE	Supreme Headquarters Allied Powers Europe
SIGINT	Signals intelligence
SPO	System program office
STAR	System threat assessment report
TEMP	Test and evaluation master plan
TIARA	Tactical Intelligence and Related Activities
TSSAM	Tri-Service Standoff Attack Missile
USCG	United States Coast Guard
USD(A&T)	Under Secretary of Defense for Acquisition and Technology
USMC	United States Marine Corps
VCJCS	Vice Chairman Joint Chiefs of Staff

1. INTRODUCTION

RAND #DB125-3

Problem

- Often, the DoD requirements and acquisition process has not ensured adequate intelligence support for new weapon systems
 - Intelligence support not considered early on
 - National intelligence capabilities and cost not adequately considered
 - Weapon developers lack incentive to include intelligence cost
 - No single decisionmaker has authority to ensure that cost to government of weapons and intelligence support is minimized
- Outcome: Real trade-offs are not examined
- Today, solving the problem takes on increased importance
 - New weapons require specialized intelligence support
 - Uncertainties about likely adversaries stress intelligence collection and production
 - Intelligence-related technologies have potential value
 - Decreased funding constrains options for new intelligence systems and weapons

In the past, the Department of Defense (DoD) requirements and acquisition process did not adequately consider the intelligence support necessary to effectively develop and employ new weapon systems.¹ Often, top-level decisionmakers of the DoD Joint Requirements Oversight Council (JROC) and the Defense Acquisition Board (DAB)² were not

¹Several examples of inadequate support for new weapon systems were noted in the recent Gulf War: (1) the lack of certain imagery products initially constrained F-117 operations, (2) the accuracy of standard intelligence products proved inadequate to support effective F-15E Low-Altitude Navigation and Targeting Infrared System for Night (LANTIRN) operations, (3) standard products proved inadequate to attack high-value targets with precision-guided weapons, and (4) the Joint Surveillance Target Attack Radar System (JSTARS) deployed without an adequate intelligence infrastructure. Similar problems were encountered when conventional variants of the Navy Tomahawk cruise missile first reached initial operational capability in the mid- and late 1980s.

²As discussed in subsequent charts, the JROC is the top-level decisionmaking body for validating new weapon systems needs, and the DAB is the top-level decisionmaking body for the acquisition of new weapon systems.

provided with the necessary information to adequately consider possible trade-offs between weapon characteristics, alternative levels of intelligence support, and operational concepts. By this, we mean that information on the benefits and cost of providing better intelligence support was not weighed against less stringent requirements on the technical characteristics of the weapons, and that decisionmakers were not adequately informed about other options available to operators to execute the mission if the operators deemed the combination of weapon characteristics and intelligence support to be inadequate. For example, if the overall accuracy of an autonomously guided weapon depends on both the accuracy of the weapon's guidance system (which is the responsibility of the weapon developer) and the accuracy of the target's location (nominally provided by the Intelligence Community) and if the resultant combination does not satisfy an established criterion, for example, a stringent criterion of no collateral damage, operators may select other weapons, such as man-in-the-loop laser-guided weapons, to strike the target.

A major factor in this situation is that a substantial fraction of all intelligence programs that support, or can support, military needs are national systems and, thus, are not under the direct control of DoD, but rather under the control of the Director of Central Intelligence (DCI). Without authoritative information on national intelligence capabilities from the DCI, rational trade-offs cannot be made. Further, because of the split in responsibilities between JROC and DAB decisionmakers and the DCI, no decisionmaker in the DoD or the Intelligence Community has the authority to ensure that total government cost is minimized while seeking the most economical combination of weapon design, intelligence system support, and concept of operations.

Complicating the problem of providing adequate information to top-level decisionmakers is the lack of an analytical framework for structuring and evaluating rational trade-offs among weapon characteristics, alternative levels of intelligence support, and operational concepts. The weapon acquisition community, the Intelligence Community, and operators have not agreed upon the procedures, models, and personnel that should be used to support JROC and DAB decisionmakers in making the necessary trade-offs. The next section discusses these factors in more detail.

In addition to the lack of an adequate process to address intelligence support, weapon developers have no incentive to carefully examine the intelligence support requirements of their weapons. For example, during the cost and operational effectiveness analysis, which is required in the first phase (concept exploration and definition) of the DoD acquisition process, it is usually assumed that the proposed weapon system concepts

would rely on "standard" intelligence products.³ Standard intelligence products are provided at no extra cost to a specific weapon system. This allows weapon developers to exclude the cost of intelligence support in their weapon system acquisition program. If standard intelligence products later prove to be inadequate, the cost of providing the necessary intelligence support is effectively externalized by weapon system developers to operators and the Intelligence Community.

The need to address the preceding problems is more acute today. Smarter and more accurate weapon systems (e.g., low observable aircraft and precision-guided weapons) are considered to be major force multipliers; however, they require specialized intelligence support. As discussed in our previous work (Hura and McLeod, 1993a, 1993b), standard intelligence products and services and current product dissemination timelines may be inadequate to support such weapons. Moreover, the end of the cold war has created uncertainties about likely adversaries; their numbers continue to grow with time. This, in turn, will stress U.S. intelligence collection and production assets, which were focused primarily on the former Soviet Union and its allies. Further, the ongoing information revolution may require changes in how the DoD weapon acquisition process deals with intelligence-related technologies. The value added by advances in traditional aerospace technologies (propulsion, materials for airframes and other vehicles, sensors, communications systems, etc.) may be outweighed by advances in intelligence-related technologies. Finally, the decreased funding for improved or new Intelligence Community programs and the acquisition of improved or new DoD weapons places a premium on making effective trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts.

³We define "standard" intelligence products and services as those for which a specific format, content, and accuracy have been agreed upon and that are produced or made available to operational commands according to specified guidelines. Basic target graphics, imagery products with relevant information about a target, are an example of standard intelligence products produced by the Defense Intelligence Agency. Because many Defense Mapping Agency (DMA) products and services are built from intelligence data sources, we also consider them as standard intelligence products and services (DMA, 1990).

Objective

Assist the Intelligence Community in developing policy and procedures that

- **Improve intelligence support for weapon acquisition**
- **Address the weapon's entire life cycle (from identification of need to retirement from inventory)**

Sponsor: Community Management Staff

The objective of this study is to assist the Intelligence Community (defined below) in developing policy and procedures that will improve its support to the acquisition of new weapon systems. To be useful, the policy and procedures must address the entire life cycle of the weapon system—from the operators' initial identification of need to the retirement of the weapon system from inventory.

This research was sponsored by the Community Management Staff (CMS), one of the staffs providing direct support to the Director of Central Intelligence (DCI, 1992b). The DCI serves as head of the Intelligence Community (Congress, 1992). The term "Intelligence Community" includes the Office of the DCI; the Central Intelligence Agency; the National Security Agency; the Defense Intelligence Agency; the Central Imagery Office; the National Reconnaissance Office; other offices within the DoD for the collection of specialized national intelligence through reconnaissance programs; and the intelligence elements of the military services (Army, Navy, Air Force, Marine Corps), the Federal Bureau of Investigation, the Department of Treasury, the Department of Energy, and the Department of State. The term "national intelligence" refers to intelligence that pertains to the interest of more than one department or agency of the federal government.

2. EXISTING INTELLIGENCE SUPPORT TO JROC AND DAB

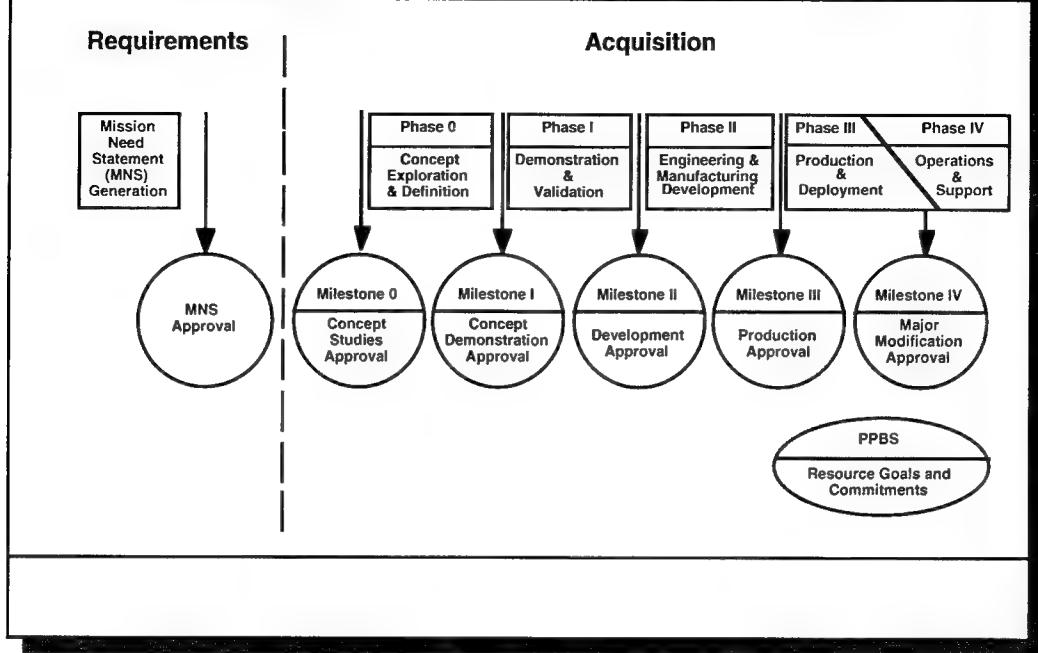
RAND #DB125-9

Outline

- **Introduction**
 - **Existing Intelligence Support to JROC and DAB**
 - **“Bottom-Up” Alternative to Improve Intelligence Support to JROC and DAB**
 - **“Top-Down” Alternatives to Improve Intelligence Support to JROC and DAB**
 - **Assessment and Observations**

In this section, we discuss the existing DoD requirements and acquisition process and examine the intelligence support currently provided to the JROC and DAB. In Section 3, we discuss the Air Force intelligence support plan (ISP), a new “bottom-up” initiative for addressing the intelligence support shortfalls in the acquisition programs of new weapon systems. In Section 4, we discuss four “top-down” alternatives to improve intelligence support to the JROC and DAB. We conclude the briefing with an assessment of the five alternatives examined and with some top-level observations.

Improved Intelligence Support Should Come Through DoD Requirements and Acquisition Process



DoD relies on an interrelated process for developing requirements and acquiring new systems or materiel to satisfy the operational needs of war fighters. If there is to be an input from the Intelligence Community to weapon system acquisition, it should occur through this process. All acquisition programs, excluding highly sensitive classified programs, are placed into one of four categories.⁴ This study focuses on major defense acquisition programs defined as (1) a program designated by the Under Secretary of Defense for Acquisition and Technology (USD(A&T)) as a major defense acquisition program, or (2) a program estimated to require a total research, development, test, and evaluation (RDT&E) expenditure

⁴Major defense acquisition programs are in ACAT I. ACAT II programs are those that do not meet ACAT I criteria and are designated by the DoD component executive as ACAT II programs, or are estimated to require (1) an eventual expenditure for RDT&E of more than approximately \$115 million in FY 1990 constant dollars or (2) an eventual expenditure for procurement of approximately \$540 million in FY 1990 constant dollars. ACAT III programs are those that do not meet the criteria for ACAT I or ACAT II and are designated by the DoD component executive as ACAT III. For ACAT III, the milestone decision authority is at the lowest level deemed appropriate by the DoD component executive. All other acquisition programs for which the milestone decision authority should be relegated to a level below that required for ACAT III are ACAT IV. For more information on the categorization of DoD acquisition programs, see DoDI 5000.2 (1991).

of more than approximately \$300 million in FY 1990 constant dollars, or (3) a program estimated to require an eventual expenditure for procurement of approximately \$1.8 billion in FY 1990 constant dollars (DoDD 5000.1, 1991). Major defense acquisition programs are further divided into two acquisition categories (ACAT) ID and IC. The USD(A&T) is the milestone decision authority for ACAT ID programs. The milestone decision authority for ACAT IC programs is the DoD component head or, if delegated, the component acquisition executive.

The requirements generation part of this process provides information to acquisition decisionmakers on operators' projected system or materiel needs. The acquisition management system is designed to assist specifically designated decisionmakers to translate those needs into alternative concepts and, ultimately, into a final system design that meets operators' needs. This interrelated process consists of phases (indicated by rectangles in the chart) and decision points or milestones (indicated by circles) for which formal procedures are defined.

A mission need statement (MNS) formally documents the operators' need. The MNS is submitted for validation and approval to a designated requirements approval authority. Next, the MNS is reviewed by the acquisition milestone authority, who determines if concept studies should be conducted. Milestone 0 is the initial interface between the requirements generation and acquisition management system. At Milestone 0, decisionmakers define the range of concepts that should be explored. *It seems reasonable for decisionmakers to require the examination of system concepts with alternative levels of intelligence support in Phase 0.*

After completion of the concept exploration and definition phase, the milestone authority reviews the concepts and determines which, if any, should go forward to the demonstration and validation phase. Comparable phase and milestone procedures are repeated until the production and deployment of a new weapon system are initiated. If a new weapon system requires major modification after its initial deployment, the proposal for modification may undergo Milestone IV review.

The DoD Planning, Programming, and Budgeting System (PPBS) is used to establish initial affordability goals and resource commitments for new system acquisition programs. These goals and resource commitments are subsequently refined based on program progress and major changes in out-year fiscal projection. Although the interaction of the PPBS with the Intelligence Community may be important, this area was outside the scope of this study. However, we believe that an analysis of the interaction of the PPBS and the Intelligence Community should be conducted.

Intelligence Support Already Required by DoD Acquisition Policies

Intelligence Support includes:

- a. "Preparation and validation of threat and threat risk information"
- b. "Assessment of the projected life-cycle costs of intelligence support"

p. 4-A-1

Intelligence Production Requirements

- a. "may be generated to provide intelligence information for a critical intelligence parameter that is not adequately addressed by an existing intelligence product"
- b. "may be developed to provide intelligence source materials"

p. 4-A-3

"Mapping, charting, and geodesy production requirements will be identified early and included in the acquisition strategy."

p. 7-C-2

SOURCE: DoDI 5000.2, Feb 23, 1991.

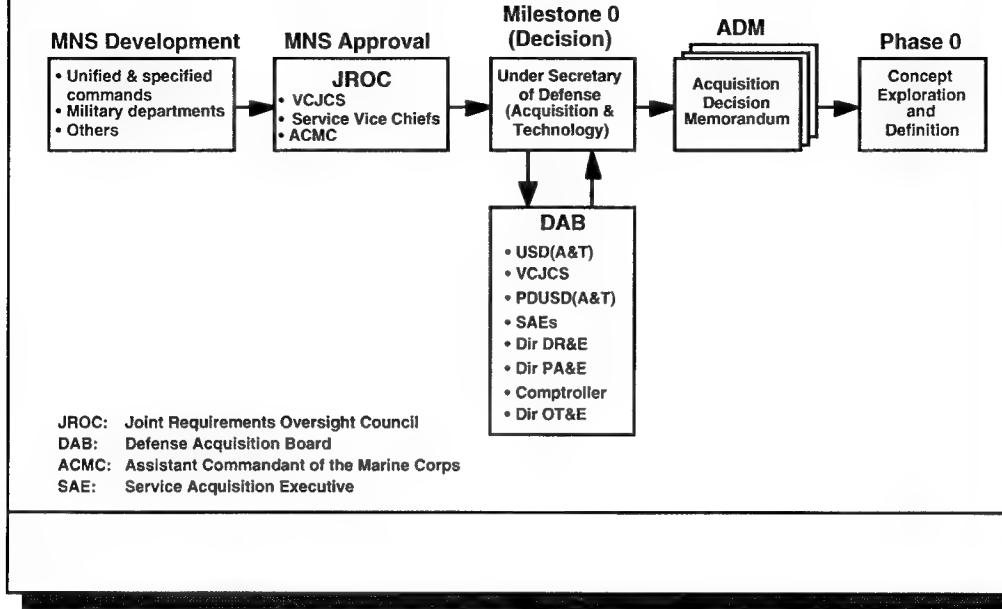
The governing DoD instruction for defense acquisition management policies and procedures (DoDI 5000.2, 1991) requires the consideration of intelligence support in the acquisition process of major systems. The preparation and validation of threat and threat-risk information are clearly defined in the instruction, and the process for developing the system threat assessment report (STAR) is well established (DIA, 1992). The instruction also requires that intelligence support cost be included in the projected life-cycle cost of the acquisition program.

Further, the instruction allows for the generation of new intelligence production requirements (IPRs) if existing intelligence products do not adequately address critical intelligence parameters required by the new system. The instruction also permits the generation of intelligence requirements if new source material is required. This can be interpreted to mean that the need for new collection assets should be explored in subsequent trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts.

The need for identifying mapping, charting, and geodesy (MC&G) data requirements is also defined. These requirements have important implications for the Intelligence Community because many MC&G products rely on information and materials collected by intelligence assets.

For example, high-resolution imagery is needed to produce accurate Digital Terrain Elevation Data (DTED), a standard MC&G product from the Defense Mapping Agency.

Now No Direct Intelligence Input at Top Level



The JROC has the responsibility for reviewing, validating, and assigning priority to a MNS submitted by unified and specified commands, military departments, the Office of the Secretary of Defense (OSD), or the Joint Staff (JS). The JROC is chaired by the Vice Chairman of the Joint Chiefs of Staff (VCJCS). The Vice Chief of Staff of the Army, the Vice Chief of Staff of the Air Force, the Vice Chief of Naval Operations, and the Assistant Commandant of the Marine Corps (ACMC) are members of the council. It is the responsibility of the council to confirm that the MNS cannot be satisfied by nonmateriel solutions, such as changes in doctrine, operational concepts, tactics, training, or organization. If the council determines that a nonmateriel solution is not feasible, it forwards the MNS as approved or disapproved to USD(A&T).

The DAB is the top-level decisionmaking forum for major defense acquisition programs. It is chaired by the USD(A&T), with the VCJCS as the vice chairman. The other members of the DAB are the Principal Deputy Under Secretary of Defense for Acquisition and Technology (PDUSD(A&T)); service acquisition executives (SAEs) of the Army, Navy, and Air Force; the Director of Defense Research and Engineering (DR&E); the Director of Program Analysis and Evaluation (PA&E); the Comptroller of the Department of Defense; and the Director of Operational Test and

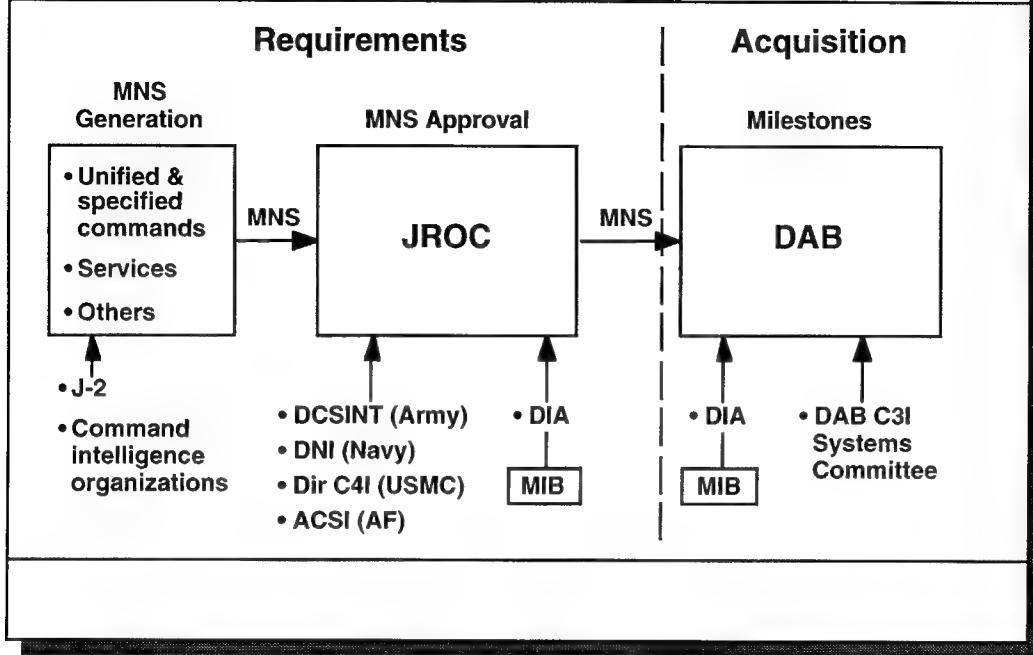
Evaluation (OT&E). *We note that no high-level decisionmaker of the Intelligence Community is a member of the JROC or DAB.*⁵ However, as we shall show in a subsequent chart, information on current and planned intelligence system capabilities is provided to the JROC and DAB by advisors.

For a MNS approved by the DAB at Milestone 0, the milestone decision authority, in the form of an acquisition decision memorandum (ADM), typically (1) defines the minimum set of materiel alternative concepts to be examined, (2) identifies one or more organizations to explore the concepts, (3) establishes the analyses that must be presented at Milestone I, and (4) identifies the amount and source of funding for the study of concepts in Phase 0.

During Phase 0, government and/or industry teams conduct a short-term cost and operational effectiveness analysis (COEA) of alternative concepts. The information generated by the COEA serves to define the most promising system concept(s) and an overall system acquisition strategy. If required by the ADM, government and/or industry teams could examine trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts as part of the COEA, and then provide that information for Milestone I review.

⁵As we shall discuss later, it is not clear that a high-level decisionmaker from the Intelligence Community should be a member of the JROC or DAB; it is more critical that a process is implemented that can provide the JROC and DAB with authoritative information on national systems.

Intelligence Input Now at the Advisory Level



As discussed in the preceding chart, intelligence information and analytical support to decisionmakers of the JROC and DAB process are provided by advisory organizations. The command senior intelligence officer (J-2) and designated representatives of other subordinate intelligence organizations may provide information about intelligence needs and implications to authorities responsible for generating the MNS. The authorities responsible for drafting the MNS may, or may not, include intelligence needs and implications in the MNS. Typically, the MNS lists threat information.

The heads of service intelligence organizations—the Army Deputy Chief of Staff for Intelligence (DCSINT); the Director of Naval Intelligence (DNI); the Marine Corps' Director for Command, Control, Communications, Computers, and Intelligence (C4I); and the Air Force Assistant Chief of Staff for Intelligence (ACSI)—can, and do, provide intelligence information and analytical support to their respective vice chiefs and, therefore, indirectly to the JROC.

The Director of the Defense Intelligence Agency (DIA) is specifically designated as the principal advisor on intelligence matters to the JROC/DAB review process (DoDI 5000.2, 1991). The Director of DIA can

call upon the Military Intelligence Board (MIB) to assist him in this role. The next chart describes the MIB.

DAB decisionmakers are also supported by the DAB C3I Systems Committee (C3ISC). Principally, this committee is responsible for providing information and analytical support on technical and architectural command, control, communications, and related intelligence issues.

Military Intelligence Board (MIB)

Functions

- Acts as senior board of advisors to Director of Defense Intelligence Agency for defense military intelligence issues, both substantive and resource
- Oversees GDIP development, reviews integrated program and budget, and resolves program issues

Composition

Principals	Associates	Advisory
<ul style="list-style-type: none"> • Dir DIA (chair) • Dep Dir DIA • DCSINT (Army) • DNI (Navy) • Dir C4I (USMC) • ACSI (AF) • Dir NSA • Dir CIO 	<ul style="list-style-type: none"> • ADDO(MA), CIA • Dir DARO • Dir Policy Support, DIA • USCG • Dir DMA • Dir DSPO • JS/J-6 • Dir DMI Staff 	<ul style="list-style-type: none"> • Defense Intelligence Functional Managers • Unified Command J-2s • DIA Representatives to Unified Commands, NSA, SHAPE

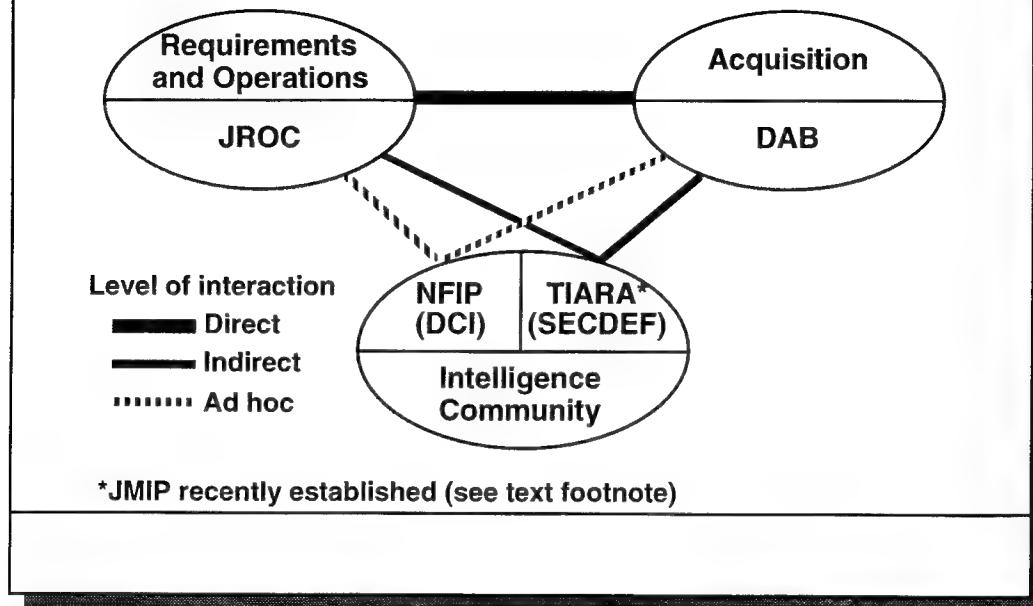
The MIB is the senior board of advisors to the Director of DIA for defense military intelligence issues, both substantive and resource. It oversees the development of the General Defense Intelligence Program (GDIP), reviews the program budget, and resolves program issues. The MIB includes several representatives of service, joint-service, and DoD organizations, and a representative from a national intelligence agency outside DoD control.

The Director of DIA is the chairman of the MIB. The Deputy Director of DIA, DCSINT (Army), DNI, ACSI (Air Force), the Marine Corps' Director for C4I, and the Directors of the National Security Agency (NSA) and the Central Imagery Office (CIO) are principal members of the MIB. The Central Intelligence Agency's Associate Deputy Director of Operations for Military Affairs (ADDO(MA)),⁶ the Director of the Defense Airborne Reconnaissance Office (DARO), and the DIA Director of Policy Support are associate members of the MIB.

⁶This associate member is the only representative from a national intelligence agency outside DoD control. NSA and CIO are combat support agencies of DoD under the authority, direction, and control of the Secretary of Defense.

Advisory members of the MIB include the Director of the Intelligence Program Support Group (IPSG) from the Office of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD(C3I)), the Deputy Assistant Secretary of Defense for Intelligence and Security (DASD(I&S)), the Director of the DMA, and the Director of the Defense Support Program Office (DSPO). *Currently, the MIB lacks a representative that can provide authoritative information on the capabilities of existing and planned national assets and the incremental cost to DoD of using existing assets in new ways or adding requirements to planned assets.*

Interaction Process Varies Between Key Organizations



One of the central issues in ensuring adequate intelligence support is the level of interaction between top-level decisionmakers representing the interest of the operators (JROC),⁷ the weapon developers (DAB), and the Intelligence Community (DCI). Based on a review of the directive and instruction governing the interrelated JROC/DAB process (DoDD 5000.1 and DoDI 5000.2, 1991), one can infer that there are strong interactions between the top-level decisionmakers involved in the process. The same cannot be said about the interaction of the Intelligence Community with the JROC and DAB.

Intelligence programs are grouped into two categories, the National Foreign Intelligence Program (NFIP) and the Tactical Intelligence and Related Activities (TIARA) program. All intelligence programs, projects, and activities of the Intelligence Community, as well as any other programs of the Intelligence Community designated jointly by DCI and the head of a U.S. department or agency or by the President, are in the

⁷In this case, the JROC represents the unified and specified commands, military services, and OSD and Joint Staff organizations that generate mission need statements.

NFIP. Intelligence programs and applications designed to support solely DoD needs constitute the TIARA program.⁸

The DCI, as the head of the Intelligence Community, is responsible for developing and presenting the annual budget for the NFIP to the President. To that end, the DCI provides guidance to elements of the Intelligence Community for preparing their annual budgets and approves such budgets before they are incorporated into the NFIP. Moreover, the DCI is the reprogramming authority for the NFIP; no funds may be reprogrammed from the NFIP by any element of the Intelligence Community without his prior approval (Congress, 1992).

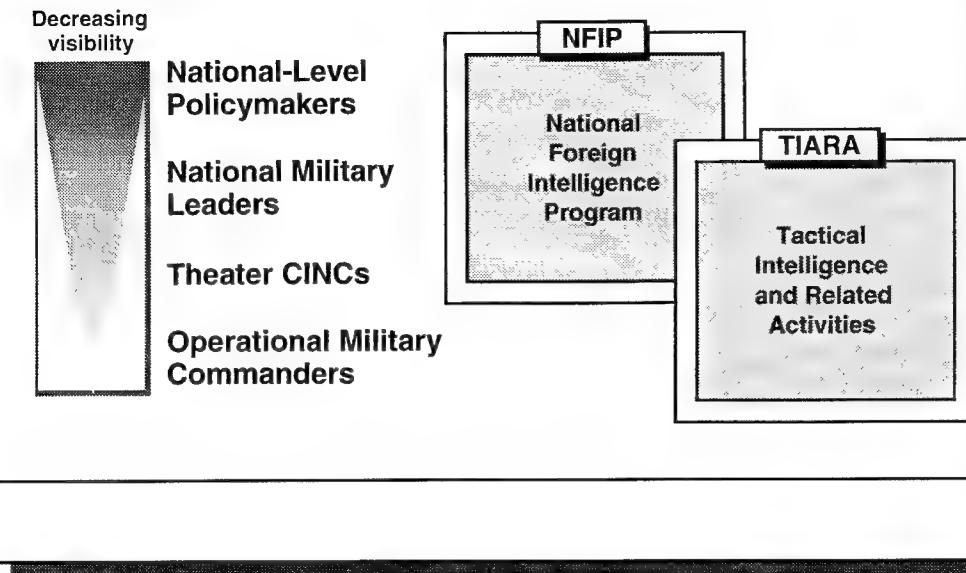
The Secretary of Defense (SECDEF) is solely responsible for developing and submitting the TIARA budget to the President. However, the Secretary of Defense also has responsibilities pertaining to the NFIP. He shall ensure that the budget of the Intelligence Community elements within DoD are adequate to support the intelligence needs of DoD, including the needs of the Chairman of the Joint Chiefs of Staff and the commanders of unified and specified commands. Moreover, the Secretary of Defense shall ensure that elements of the Department of Defense within the NFIP implement appropriately the policies and resource decisions of the DCI (Congress, 1992)

The subdivision of intelligence programs and the distinct responsibilities of the DCI and Secretary of Defense lead us to characterize the interaction between the national elements of the Intelligence Community and the JROC and DAB as ad hoc. By this, we mean that a process for providing authoritative information on national intelligence programs and possible alternative levels of support to DoD systems has not been formalized. This, in turn, impedes effective trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts within the existing JROC and DAB process.

⁸During the preparation of this report, we became aware of a new DoD program, the Joint Military Intelligence Program (JMIP), that began in June 1994 (Deutch, 1994b). The JMIP contains the budget for DoD intelligence efforts that support the intelligence needs of more than one military service. The TIARA program supports service-specific intelligence efforts within DoD.

National Intelligence Programs Not Equally “Visible” to All Key Players

- “Visibility” = Information, Understanding, and Involvement



Another key issue in ensuring adequate intelligence support is that the NFIP is designed to provide support to national-level policymakers, national military leaders, and, as requested, theater commanders in chief (CINCs). It is not designed to support operational commanders; however, it may do so. Therefore, it is not surprising that weapon developers and representatives of organizations involved in the weapon system acquisition process have limited visibility into national intelligence programs. This lack of visibility may result in the overstatement (or understatement) of existing or planned intelligence capabilities to weapon developers and the operators. If, during the approval process, the cost to DoD of improved national capabilities is not presented, the users will be surprised when the bill is presented (especially, when many believe that national systems are paid for by the Intelligence Community and, thus, are “free”).

We broadly characterize “visibility” as having adequate information, understanding the information and its implications, and then being involved in national programs. The decreasing visibility into national intelligence programs from national-level policymakers to operational military commanders reflects the current structure of the Intelligence Community.

In Actuality, the DoD Requirements and Acquisition Process Has Not Adequately Addressed Intelligence Support

- Security constraints hindered dialogue
 - Weapon systems developed within SAR programs
 - Important intelligence capabilities classified SCI
- Trade-offs between weapon system characteristics, operational concepts, and intelligence support not adequately explored (lack of authoritative Intelligence Community input on national systems)
- Life-cycle costs of intelligence support not adequately considered
- Authoritative document defining intelligence support infrastructure for new weapons not developed

A review of the top-level directive and instruction governing the DoD requirements and system acquisition process (DoDD 5000.1 and DoDI 5000.2, 1991) would lead a reader to believe that intelligence support is being adequately considered in the acquisition of new systems. Often, in practice, that has not been the case. Several impediments must be addressed before adequate intelligence support can be ensured for the acquisition of new systems.

First, security constraints hinder the flow of information and the performance of analysis required to provide JROC and DAB decisionmakers with accurate information on weapon design, intelligence support, and operational concept trade-offs. The problem is most acute with weapon systems that are developed within special access required (SAR) programs. A limited number of Intelligence Community representatives have visibility into a weapon system developed under a SAR program. Consequently, the Intelligence Community may be unable to provide adequate information on the support available to such a weapon system. Conversely, many important intelligence capabilities are classified as sensitive compartmented information (SCI). A limited number of weapon developers and operators have the clearances required to access this information. As a result, weapon developers and operators

may be unaware that alternative levels of intelligence support are available to support new systems. One of the objectives of the ongoing Air Force intelligence support plan development process described in the next section of this report is to help resolve this issue (Department of the Air Force, 1992).

Second, the JROC and DAB process lacks authoritative and accurate input about the capabilities and programs of the national elements of the Intelligence Community. As we discuss in the next chart, this problem prevents decisionmakers from adequately examining trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts. Moreover, the combination of this problem and the security problem precludes the calculation of accurate life-cycle cost of the intelligence support for new weapon systems.

Finally, an authoritative document defining the intelligence support infrastructure for new weapon systems is not produced as part of the JROC/DAB process. Without such a document, decisionmakers cannot adequately monitor the development of intelligence support for new weapon systems that cannot rely on the existing intelligence infrastructure to support the needs of the war fighters.

3. "BOTTOM-UP" ALTERNATIVE TO IMPROVE INTELLIGENCE SUPPORT TO JROC AND DAB

RAND #DB125-35

Outline

- **Introduction**
- **Existing Intelligence Support to JROC and DAB**
- **"Bottom-Up" Alternative to Improve Intelligence Support to JROC and DAB**
- **"Top-Down" Alternatives to Improve Intelligence Support to JROC and DAB**
- **Assessment and Observations**

In this section of the briefing, we discuss one "bottom-up" option to address the problems in providing adequate intelligence support for the acquisition of new weapon systems. Recognizing some of these problems, the Air Force instituted a process for developing intelligence support plans. We focus on this initiative because some of our past research directly supported this initiative. Moreover, we have firsthand experience in the development of ISPs for two major weapon systems, the Tri-Service Standoff Attack Missile (TSSAM) and the B-2 bomber. For additional information on our work in support of this Air Force initiative, please see Hura and McLeod (1993a, 1993b, 1994).

One Approach to Ensure Intelligence Support to Weapon System Acquisition: AF ISP Process

- **Intelligence Support Plan (ISP)**
 - Authoritative reference document for intelligence support requirements and costs
 - Currently, weapon-system specific
 - Weapon's entire life cycle addressed: from identification of need to retirement from inventory
- **Key players**
 - Intelligence Counterpart Officers (ICOs)
 - Intelligence Support Working Groups (ISWGs)

The ISP is the authoritative document for identifying, planning, and monitoring the implementation of the intelligence support infrastructure for a weapon system throughout its life cycle—from definition of need through retirement from inventory. At a minimum, the ISP will address all intelligence support requirements related to (1) collection management, (2) collection, exploitation, and production of human source intelligence (HUMINT), signals intelligence (SIGINT), imagery intelligence (IMINT), measurement and signature intelligence (MASINT), and fused intelligence, (3) intelligence dissemination, (4) intelligence manpower and training, (5) targeting intelligence, (6) MC&G, (7) combat intelligence data, (8) modeling and simulation, (9) foreign material exploitation, and (10) foreign military sales (Department of the Air Force, 1994b). Currently, ISPs are weapon-system specific, that is, an ISP covers one designated weapon system, such as TSSAM or B-2.

The ISP is produced by the user command (Air Force major command) and becomes a formal document when it is signed off at Air Force Headquarters by the Assistant Secretary for Acquisition (SAF/AQ), the Deputy Chief of Staff for Plans and Operations (AF/XO), and the Assistant Chief of Staff for Intelligence (AF/IN). The intelligence counterpart officer (ICO) of the user command has the lead in producing

the ISP; he works closely with his ICO counterpart at Air Force Headquarters⁹ and members of the intelligence support working group (ISWG). The next chart discusses in more detail the proficiencies required of the ICOs and ISWG members and the composition of the ISWG.

Because precision-guided weapons (PGWs) have many common support requirements, the Air Force is investigating the possibility of evolving the existing Air Force TSSAM ISP into a joint-service TSSAM ISP and then into an ISP for all PGWs by including the other joint-service PGWs, such as the Joint Direct Attack Munition (JDAM) and the Joint Standoff Weapon (JSOW). *We believe this goal has merit because more effective trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts can be made when an entire category of weapons (in this case, PGWs) is considered.*

⁹Currently, the "Headquarters" ICO is a member of the 497 Intelligence Group, which reports to the Air Intelligence Agency's (AIA's) National Air Intelligence Center (NAIC).

Competent ICOs and ISWG Members Are Essential to ISP Process

ICO/ISWG Skills	ISWG Composition
<ul style="list-style-type: none"> • Understand operator needs • Understand weapon system characteristics • Understand intelligence <ul style="list-style-type: none"> – Collection – Analysis – Production – Dissemination – Cost 	<ul style="list-style-type: none"> • User command and headquarters <ul style="list-style-type: none"> – Requirements – Operations – Acquisition – Intelligence • Weapon developers <ul style="list-style-type: none"> – Materiel command – SPO – Contractors • Testers • Intelligence providers <ul style="list-style-type: none"> – Air Force – Joint – Other service – DIA, DMA – National agencies (<i>limited</i>)

Effective dialogues between operators, weapon developers, and intelligence providers are essential

Competent ICOs and ISWG members who understand operator needs, weapon system characteristics, intelligence capabilities, and cost are essential in developing an effective intelligence support plan. To ensure that the ISP accurately reflects the concerns of operators, weapon developers, and intelligence providers, representatives of diverse organizations must be included in the ISWG. Moreover, these representatives must be capable and empowered to provide substantive inputs in their areas of expertise and answer questions that are important in defining possible trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts.

Equally important, members of the ISWG must provide information on potential trade-offs to their superiors so that they can examine and determine which trade-offs they can support. For example, if the draft concept of operations (CONOPS) envisions a weapon employment option that the technical characteristics of the weapon and/or the existing intelligence capabilities cannot support, one of several trade-offs can be made. One trade-off would be to change the CONOPS. Another would be to change the technical characteristics of the weapon, and still another would be to develop new intelligence capabilities; these two trade-offs, in particular, could significantly change the funding required for the system.

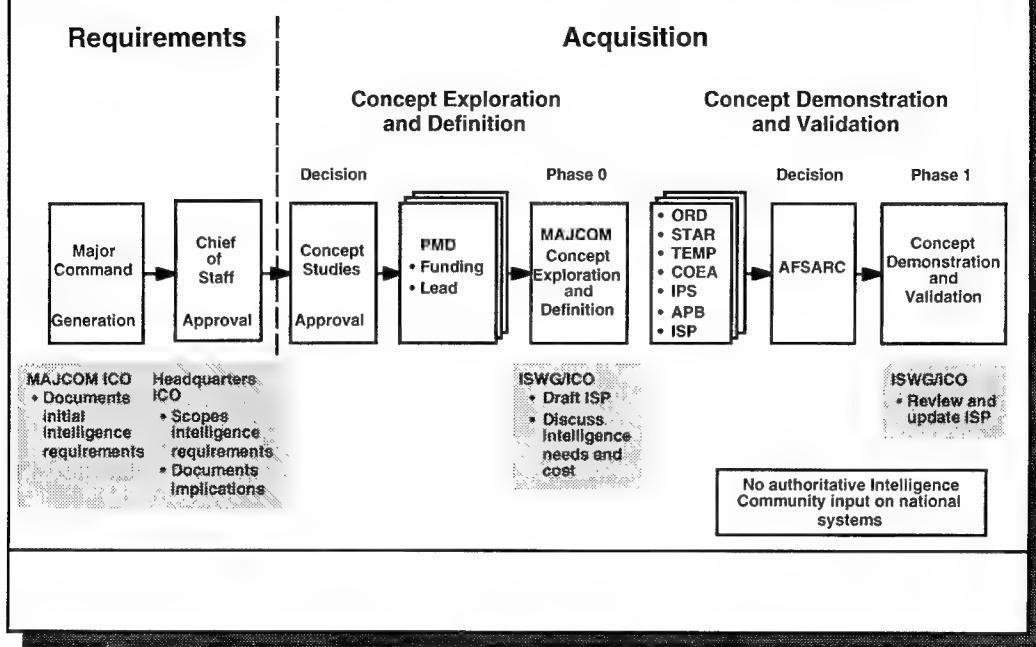
Ultimately, the choice of trade-offs should reflect the needs of the customers—the operators.

One of the key shortfalls of the Air Force ISP process is that it lacks authoritative input¹⁰ from the Intelligence Community as to the support that Air Force weapon systems can expect from national assets.

Representatives from national agencies have been invited and have attended ISWG meetings but seldom provide sufficient information for defining potential trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts.

¹⁰“Authoritative” input means information about the technical characteristics (including system specifications), program status, and funding of existing and planned national systems that is provided by designated representatives of organizations specifically authorized by the DCI to provide such information.

Air Force ISP Approach in Context of System Requirements and Acquisition Process



As one would expect, the Air Force system requirements and acquisition process for ACAT 1C programs closely mirrors the DoD process for ACAT 1D programs. Air Force major commands (MAJCOMs) generate mission need statements. The Chief of Staff of the Air Force (CSAF) approves the mission need statements. Approved MNSs are forwarded to the appropriate Milestone 0 decision authority for review. Following Milestone 0, Air Force Headquarters publishes a program management directive (PMD) to initiate concept studies. The PMD assigns MAJCOM responsibilities and provides funding (if available) for concept studies.

In Phase 0, the user or operating command leads the COEA efforts and determines the preferred solution. The operating command prepares a brief operational requirements document (ORD) describing the preferred solution. During this phase, the Air Force Materiel Command, with the operating MAJCOM and the Air Force Operational Test and Evaluation Center (AFOTEC), develops the STAR and the test and evaluation master plan (TEMP) for the preferred solution, the integrated program summary (IPS), and the acquisition program baseline (APB) (Department of the Air Force, 1994b).

For non-ACAT 1D programs, the Air Force Systems Acquisition Review Council (AFSARC) is the approval authority for Milestones I through IV.

The ISP process is designed to assist decisionmakers involved in the Air Force requirements and acquisition process in ensuring adequate intelligence support for new weapon systems. The key elements of the ISP process are shaded in the chart. The ICO of the MAJCOM generating the MNS documents the initial intelligence requirements and ensures that the MNS includes an accurate description of weapon intelligence support requirements. After the MNS is submitted to the CSAF for approval, the headquarters ICO scopes the intelligence requirements and documents the intelligence implications related to the MNS.

During Phase 0, the headquarters ICO and the operating command ICO determine the agenda, timing, and location for convening the ISWG. The ISWG discusses intelligence needs and cost for the alternative system concepts identified in Phase 0 and assists the operating command ICO in building the ISP. After the ISP is approved by SAF/AQ, AF/XO, and AF/IN, it becomes part of the formal documentation required for subsequent milestone decisions. The ISP is a living document that is updated to reflect changes in weapon system characteristics and operational concepts. The ISWG monitors the development of the acquisition program and helps the operating command update the ISP. A more complete discussion of the Air Force ISP process can be found in the ICO handbook (Department of the Air Force, 1993a) and the Air Force instruction describing intelligence support to the acquisition process (Department of the Air Force, 1994a).

As previously discussed, a key shortfall (shown in the lower righthand corner of the chart) of the current Air Force ISP process is the lack of an authoritative input on national systems from the Intelligence Community.

AF ISP Process Is a Logical, but Complex, Process

- Considers operators, weapon developers, and intelligence concerns and serves to highlight and resolve key issues
- Leads to commitment by acquisition, operations, and intelligence decisionmakers to the development and use of defined intelligence support infrastructure
- Requires dedicated resources (personnel, funding)
- Involves participation of knowledgeable individuals from many organizations with diverse responsibilities and objectives

Example: Development of AF ISP for TSSAM began in early 1992 and is now ready for final sign-offs

Based on our direct participation in the development of the Air Force ISP process, from its inception through the building of two weapon-specific (TSSAM and B-2) draft ISPs, we consider the process to be logical and potentially very useful as an approach for ensuring adequate intelligence support for new weapon systems. The process considers operators, weapon developers, and Intelligence Community concerns and provides a forum for defining and exploring trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts. For example, the process of building the TSSAM ISP led to changes in the weapon's initial draft CONOPS, intelligence support requirements, and ORD, when it became clear that the technical characteristics of the weapon would not support the draft CONOPS and that the weapon would not operate effectively with standard intelligence products.

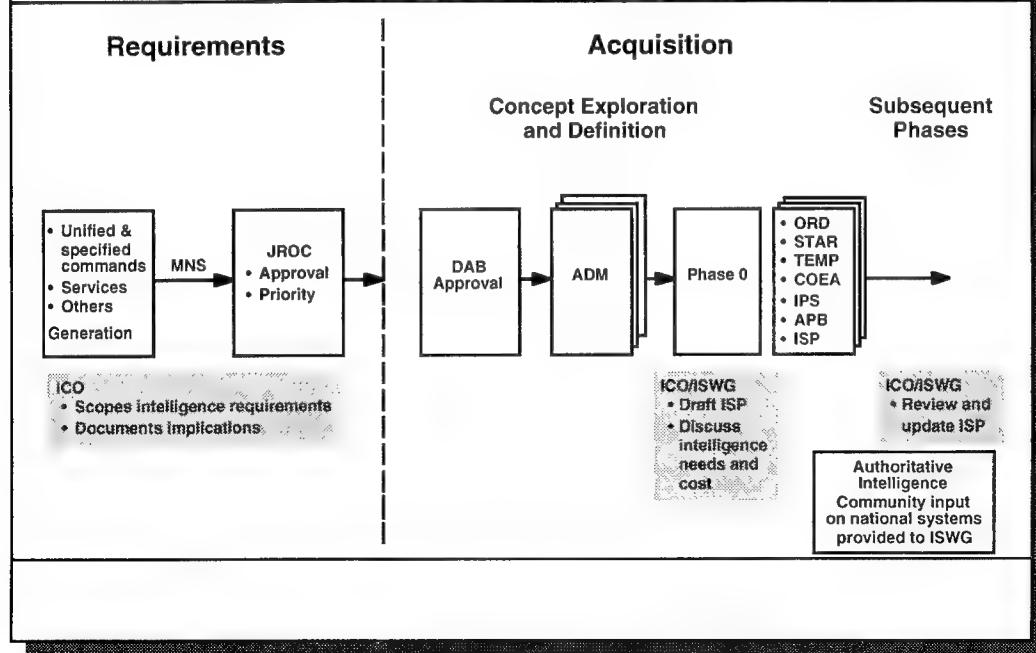
To be effective, the ISP process must be supported with dedicated funding to cover personnel, data gathering and analyses, and administrative cost. The process requires numerous interactions between ISWG members, who represent many organizations with diverse responsibilities. Typically, data gathering and analyses are conducted to examine the relative merits of trade-offs between weapon designs, alternative levels of intelligence

support, and operational concepts. Several drafts of the ISP for a single weapon are required before a final draft is produced.

The ISP development process, from the first ISWG meeting to the publication of the authoritative ISP, may take substantial time. For example, the initial TSSAM ISWG meeting was held in early 1992. The final draft has been signed by the operating command and the joint system program office (JSPO) responsible for building TSSAM but has not yet (as of November 1994) been signed by SAF/AQ, AF/XO, and AF/IN.

The experience of the TSSAM ISP is not unique; the development of ISPs for several other weapon systems is consuming comparable amounts of time. Some of the delays in producing the current set of ISPs can be directly attributed to the fact that the weapon systems of interest are well into the acquisition cycle (many are now in the engineering and manufacturing development phase). Implementing the ISP at that stage limits the flexibility of decisionmakers to make trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts, and to equitably apportion intelligence support cost across many programs. Other delays appear to have been caused by the fact that the ISP process was a new initiative and not yet institutionalized. When fully institutionalized, we anticipate that the ISP process will be synchronized with the acquisition process.

Option I: Expanded ISP Approach in Context of DoD Requirements and Acquisition Process



One approach that may improve the intelligence support to the DoD requirements and acquisition process for new weapon systems is to incorporate an expanded Air Force ISP process into the JROC and the DAB. As shown in the lower righthand corner of the chart, the "expanded" ISP process to support the DAB would include an authoritative input from the national elements of the Intelligence Community. By this, we mean that the ICO of the organization generating the MNS, the ICO of the organization designated to lead the program, and members of a DoD-level ISWG with proper clearances are provided accurate information on existing and planned national intelligence capabilities (i.e., technical characteristics, access [availability to DoD], coverage, accuracy, and timeliness of national systems) and on the incremental cost to DoD for the use of those capabilities. This information is provided in briefings by an empowered national community representative(s), who is a designated member of the ISWG, and via official correspondence. If necessary, guidance for preparing and providing authoritative information on national systems for this and the other options could come from the Intelligence Community Executive Committee (IC/EXCOM), the principal Intelligence Community advisory body to the DCI (DCI, 1992a). Among others, the DCI, the VCJCS, the

Director of the DIA, and the ASD(C3I) are permanent members of the IC/EXCOM.

Accurate and authoritative information about national systems is essential to the ICOs and the ISWG members in structuring possible trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts. JROC and DAB decisionmakers need accurate information on the possible trade-offs to select the preferred intelligence infrastructure, which is then documented in an ISP. If necessary, the ISP would have an SCI/SAR annex that could discuss national-level intelligence support and SAR weapon program issues.

Recently, the Air Force briefed the PDUSD(A&T) on the ISP program. He believes that the Air Force initiative has application for acquisition programs throughout the DoD, and he has asked the Army and the Navy to comment on the initiative and to compare it with what they are currently doing to address intelligence support issues for weapon acquisition programs (Longuemare, 1994b).

4. "TOP-DOWN" ALTERNATIVES TO IMPROVE INTELLIGENCE SUPPORT TO JROC AND DAB

RAND#DB125-53

Outline

- **Introduction**
- **Existing Intelligence Support to JROC and DAB**
- **"Bottom-Up" Alternative to Improve Intelligence Support to JROC and DAB**
- **"Top-Down" Alternatives to Improve Intelligence Support to JROC and DAB**
- **Assessment and Observations**

In this section of the briefing, we discuss four "top-down" options to address the problems in providing adequate intelligence support for the acquisition of new weapon systems.

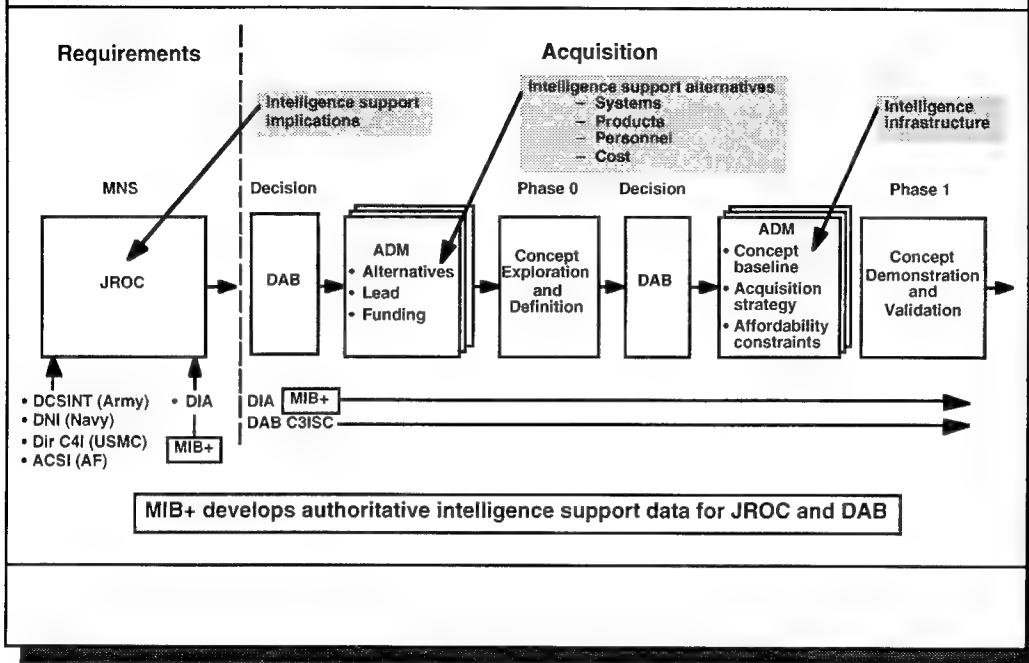
Alternative “Top-Down” Approaches

- JROC and DAB are appropriate top-level forums
- Options for improving JROC/DAB process
 - MIB provided with authoritative Intelligence Community input on national systems (i.e., MIB+)
 - Joint Precision Strike Integration Office (JPSIO)
 - Joint Warfighting Capability Assessment Teams (JWCATs)
 - Joint Review

Based on our examination of the JROC and DAB process, we believe the JROC and DAB are appropriate top-level forums for ensuring adequate intelligence support for major new weapon systems. However, without changes, these forums will not be able to accomplish this objective. In the next series of charts, we discuss four “top-down” approaches for improving the ability of the JROC and DAB decisionmakers to ensure adequate intelligence support to new weapons.

During the preparation of this report, we became aware of the newly established Defense Intelligence Executive Board (DIEB) (Deutch, 1994a), which held its first meeting on 29 October 1994. The DIEB is the senior corporate advisory body to the Secretary of Defense for review and oversight of DoD intelligence programs and activities. It is also the senior management body providing planning, programming, and budgeting oversight for the Joint Military Intelligence Program. The DEPSECDEF chairs the DIEB (in addition to the DAB), and the DCI is a member of the DIEB. Because of the newness of this forum, we did not have sufficient visibility into the DIEB process to include it as one of our “top-down” options for improving intelligence support for the acquisition of new weapon systems; on the surface, we believe it merits investigation.

Option II: Expand MIB Capabilities



This option envisions one major change to the current MIB. In this option, the MIB is given authoritative information on the capabilities of existing and planned national intelligence assets and on the incremental costs to DoD of using existing assets in new ways or adding additional requirements to planned assets; we denote this expanded capability as MIB+. This input would be provided to principal members of the MIB+ by a specifically designated representative of the DCI or by official correspondence. With this information and comparable information on TIARA programs, the MIB+ would develop authoritative data on alternative levels of intelligence support that could be made available to support a MNS and, subsequently, alternative weapon systems concepts. The Director of DIA would then provide this information to the JROC and DAB decisionmakers.

With this information, DAB decisionmakers would specify (in the Milestone 0 ADM) the intelligence support alternatives that should be considered in Phase 0. In the Milestone I ADM, DAB decisionmakers could ensure that the concept baseline adequately defines and addresses intelligence infrastructure cost. Upon completion of each of these milestones, JROC decisionmakers would review the proposed intelligence infrastructure to ensure that it satisfies operator needs.

Option III: Joint Precision Strike Integration Office

- Objective: Improve technical integration of joint-service systems
- O-6 leadership rotated among services (guided by Joint Steering Committee)
- Staffed by operations, acquisition, and intelligence personnel from each service (6 to 12 personnel)
- Responsibilities
 - Coordinate service acquisition efforts in support of CINC requirements
 - Develop joint precision strike road map
 - Review and coordinate draft required by JROC/DAB process and other documents related to precision strike
 - Assess PGW accuracy, timelines, data paths, and forecast needs

The idea of creating a Joint Precision Strike Integration Office (JPSIO) was generated by the Air Force and Navy in response to a request from the PDUSD(A&T) for views on how to do a better job of technical integration and acquisition oversight in developing targeting support for standoff weapons (Longuemare, 1994a).

As discussed by the Navy and the Air Force (Department of the Air Force, 1994c) in briefings to the JROC, the primary objective of the office is to improve the technical integration of joint and service systems. The notional JPSIO is manned by 6 to 12 personnel from the services and a small number of civilians with expertise in operations, acquisition, and intelligence. A joint steering committee provides oversight and guidance to the office.

The responsibilities of the JPSIO would include (1) coordination of service acquisition efforts of precision strike systems, (2) development of a joint precision strike road map, (3) support to the JROC/DAB process on issues related to precision strike, and (4) assessment of weapon accuracy, timelines, and data paths. To execute those responsibilities, the personnel of the JPSIO would have to understand operator needs, weapon characteristics, and intelligence requirements. Therefore, for this option, we postulate that the JPSIO also would develop and provide the JROC

and DAB information on trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts. However, technical integration is a major problem that, by itself, will tax the staff. Adding further personnel for another major function is not a desirable solution.

Option IV: Strike Joint Warfighting Capability Assessment Team

- **Objective: Provide consolidated assessment of precision strike capabilities with supporting intelligence, surveillance, and reconnaissance**
- **Team led by Joint Staff J-8 with operations, acquisitions, and intelligence personnel from service, joint-service, OSD, and national organizations**
- **Product: POM issues regarding strike and options to address those issues**

The joint warfighting capability assessment teams (JWCATs) are key elements of a larger initiative of the Deputy Secretary of Defense and the VCJCS to consolidate requirements, acquisition, and program assessments (Joint Staff Director for Force Structure, 1994). The JWCATs were created to (1) assess warfighting capabilities and identify shortfalls, (2) assess the effects of reduced funding on existing and planned capabilities, and (3) provide recommendations to the JROC and DAB for addressing those issues.

The Strike JWCAT is the model for our option IV for improving intelligence support to the JROC and DAB process. The objective of the Strike JWCAT (which includes an intelligence subcommittee) is to provide a consolidated assessment of precision strike capabilities with supporting intelligence. The initial phase of this initiative has been put into practice by the VCJCS. JWCATs for nine broad warfare areas were created.¹¹ The

¹¹JWCATs were created for the following broad areas: (1) strike, (2) ground maneuver, (3) strategic mobility and its protection, (4) air superiority, (5) deterring/countering proliferation of weapons of mass destruction, (6) command and control/information warfare, (7) intelligence, surveillance, and reconnaissance, (8) overseas presence, and (9) joint readiness.

teams examined warfighting capabilities in those areas and presented their assessments to the JROC. After JROC review, issues deemed necessary to address in the JROC and DAB process were briefed in September 1994 to unified and specified commands. The next step is to present those issues and recommendations on which the JROC and CINCs agreed to the Chairman of the Joint Chiefs of Staff for his review, approval, and subsequent submission to the Secretary of Defense. If approved by the Secretary of Defense, the issues would be included in the Defense Guidance Memorandum for the military services to address in their program objective memorandums (POMs). It is too early to tell whether this initiative will succeed and be institutionalized.

Assuming that the Strike JWCAT has authoritative information on national and tactical intelligence capabilities and costs and has adequate analytical capabilities, it should be able to provide the JROC and DAB decisionmakers with the necessary information to make trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts.

A possible variant of option IV is to integrate the information and analysis of the Intelligence, Surveillance, and Reconnaissance (ISR) JWCAT into the Strike JWCAT. But this might not be necessary because some members of the ISR JWCAT are also members of the Strike JWCAT Intelligence Subcommittee.

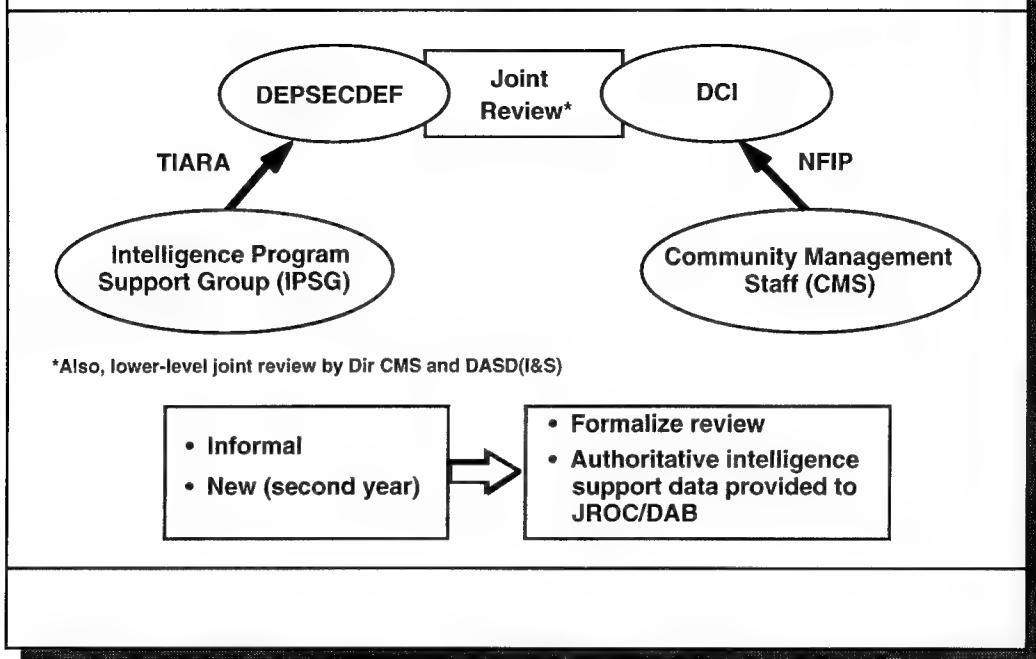
Strike Assessment Team and Strike Intelligence Subcommittee

Strike Assessment Team	Strike Intel Subcommittee
J-8/Forces Division	USCENTCOM Representative
J-8/System Programs	USEUCOM Representative
Evaluation Division	USPACOM Representative
J-8/Program & Budget	USSOUTHCOM Representative
Analysis Division	OSD/PA&E
J-1/Personnel Plans	OSD/PA&E/TacAir
J-2J	OSD/PA&E/FSAD
J-2P	OSD/PA&E/SS&ACD
J-3/STOD	OSD/Strategy & Requirements
J-3/JOD	OSD/A&T Tactical Warfare Programs
J-4/Sustainability, Mobilization & Engineering Division	OSD/A&T Electronic Warfare
J-5	DIA/C-FM2A
J-6	DIA/PGI-4
J-7/JOD	CNA
US Air Force/XOXO	IDA (SF-RD)
US Air Force/INX	
US Army	
US Marine Corps P&R	
US Marine Corps (Air)	
US Navy N88	
USACOM Representative	
	J-8, Strike Intel Subcommittee Chair
	CIO
	DCI Rep to JCS
	DIA/J-2P
	DIA/C-FM2
	DIA/PGI-4
	HQ MC C4I
	IDA
	J-8/CFAD
	J-8/PBAD
	OSD/C3I/IPSG
	OSD/PA&E/Strategic & Space Programs
	OSD/S&R/Strategy
	SAF/SS
	US Army/DAMO-FDG
	US Army/DAMO-FDI
	US Navy/N88WS
	US Air Force/INT
	US Air Force/INXA
	USD (A&T)

The Strike JWCAT includes representatives of the services, Joint Staff, unified and specified commands, OSD organizations, and two federally funded research and development centers—the Center for Naval Analyses (CNA) and the Institute for Defense Analyses (IDA).¹² The team is supported by a Strike Intelligence Subcommittee, which includes representatives from DoD and service intelligence organizations and the DCI. The broad representation of the operations and acquisition communities and the Intelligence Community on the Strike JWCAT and the supporting intelligence subcommittee, on the surface, seems adequate to ensure that the concerns of each of these communities are effectively reflected in the assessments and resultant recommendations. However, this assumes that the team and subcommittee have adequate time and the appropriate analytical skills (or can rely on competent analytical organizations for support) and that they are provided with authoritative information on existing and planned national capabilities and on the incremental cost to DoD of using the existing assets in new ways or adding requirements to planned capabilities.

¹²The chart lists the organizations that were asked to participate on the Strike JWCAT and that sent representatives. Because we do not know if a formal membership for the Strike JWCAT has been established, we do not attempt to define all the office symbols.

Option V: Joint Review



The final option we examined is for top-level decisionmakers responsible for national and tactical intelligence programs to provide authoritative information to JROC and DAB decisionmakers on the intelligence support alternatives that should be considered in making trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts. This option builds on the informal Joint Reviews that were initiated last year between the Deputy Secretary of Defense (DEPSECDEF) and the Director of Central Intelligence. The Community Management Staff supports the DCI and the Intelligence Program Support Group supports the DEPSECDEF. Since the DCI is responsible for the NFIP and the DEPSECDEF (representing the SECDEF) is responsible for the TIARA, any joint agreements they reach in this forum would be authoritative and, if communicated as such to JROC and DAB, could lead to adequate trade-offs. We also note that lower-level joint reviews are periodically conducted by the Director of CMS and the DASD(I&S).

5. ASSESSMENT AND OBSERVATIONS

RAND #DB125-69

Outline

- **Introduction**
- **Existing Intelligence Support to JROC and DAB**
- **“Bottom-Up” Alternative to Improve Intelligence Support to JROC and DAB**
- **“Top-Down” Alternatives to Improve Intelligence Support to JROC and DAB**
- **Assessment and Observations**

In this final section of the briefing, we summarize the alternative approaches for improving intelligence support to the acquisition process, provide an assessment of these approaches, and conclude with some top-level observations.

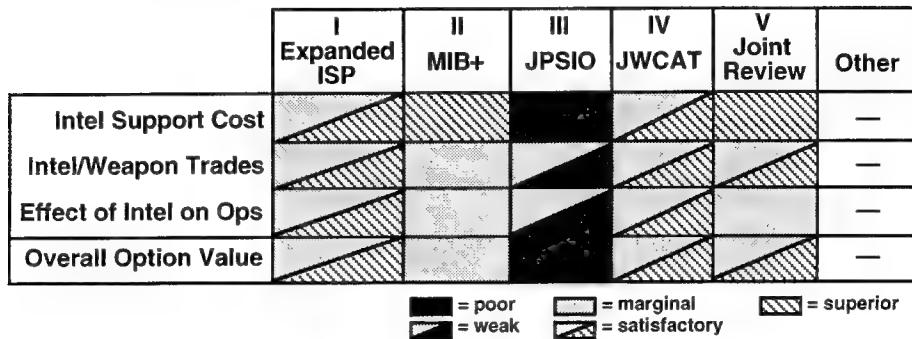
Alternative Approaches (Not Rank Ordered)

- **Expand AF ISP process to include other services and produce ISP for selected DoD PGWs; incorporate process into DoD requirements and acquisition policies and procedures (Option I)**
- **Rely on JROC and DAB procedures and structure, but ensure decisionmakers have adequate information to make trade-offs between weapon systems, operations, and intelligence support**
 - **Expand Military Intelligence Board capabilities (Option II)**
 - **Develop Joint Precision Strike Integration Office (Option III)**
 - **Institutionalize Joint Warfighting Capability Assessment initiative (Option IV)**
 - **Formalize Joint NFIP/TIARA Reviews (Option V)**

The five options for improving intelligence support to the acquisition process are summarized in the chart; one option is based on an Air Force initiative (the ISP) and the other four are “top-down” approaches.

Assessment of Alternatives

- Criteria: Potential to provide JROC/DAB with accurate information on
 - Incremental costs to DoD of intelligence support alternatives
 - Intelligence support versus weapon system trade-offs
 - Effects of alternative levels of intelligence information on operations



To assess the relative merits of the five options for improving the intelligence support to the acquisition of new weapon systems, we used three criteria. First, we evaluated the option's ability to define a range of intelligence support alternatives for new weapon systems and to identify the incremental costs to DoD for those alternatives. Second, we assessed the value added by each option in defining and assessing weapon systems versus intelligence support trade-offs. Third, we examined the option's ability to determine the effects of alternative levels of intelligence information on operations. The overall value of the option reflects our assessment of relative improvement in the accuracy and breadth of information provided to JROC and DAB decisionmakers to make effective trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts. To differentiate the value of the options, we use qualitative descriptors (indicated by the shading on the chart).

With authoritative information on both national and tactical intelligence capabilities (existing and planned) and on the incremental costs to DoD of operating existing assets in new ways or adding requirements to planned assets, we believe that the first option (expanded ISP) would provide the JROC and DAB with adequate information to make trade-offs between

weapon designs, alternative levels of intelligence support, and operational concepts. All key players are represented in the ISWG; thus, their concerns should be adequately reflected in the definition and analysis of weapon systems versus intelligence support trade-offs. Moreover, the ISWG is a forum in which the effects of intelligence on operations can be analyzed. This assumes that ISWG members and the ICOs have the requisite analytical skills or can authoritatively request support from analytical organizations as required.

The overall assessment of option I is satisfactory. We do not evaluate this option (or, for that matter, any of the other four options) as superior overall because of the inherent difficulties of the three different communities (operations, acquisition, and intelligence), each with different objective functions and responsibilities, to reach an optimal common solution. In addition, because of the number of organizations that need to interact and to be involved in the process, the process will, at times, be inefficient and imperfect.

The MIB+ (option II) is the top-level DoD intelligence forum. With authoritative information on national intelligence capabilities (existing and planned) and on the incremental costs to DoD of operating existing systems in new ways or adding requirements to planned capabilities, this option, we believe, would develop good intelligence support alternatives and cost estimates of those alternatives. However, the MIB+'s ability to develop weapon systems versus intelligence support trade-offs and accurate information on the effects of alternative levels of intelligence support on operations is marginal. The MIB+ does not include authoritative representatives from the operations and weapon acquisition communities. (Although we understand that there is an effort under way to expand the MIB membership to include representatives from these communities when required, we do not have sufficient information to comment.) Thus, the overall assessment is marginal.

As currently defined, the focus of the JPSIO (option III) is on technical integration and acquisition oversight of strike systems. Consequently, it cannot develop intelligence support alternatives and provide incremental costs to DoD of those alternatives. Without the capability of defining intelligence alternatives and their associated costs, the JPSIO cannot effectively perform weapon system versus intelligence support trade-offs or examine the effects of intelligence on operations. Consequently, we consider this option as poor.

The Strike JWCAT was created to support JROC and DAB decisionmakers in assessing strike capabilities and to take into consideration alternative levels of intelligence support. Moreover, all key players are represented

on this team. Assuming that the representatives can provide authoritative information in their areas of responsibility, and that the JWCAT has adequate analytical capabilities or can rely on support from competent analytical organizations, we believe that this option would provide satisfactory overall support to the JROC and DAB.

The Joint Review is the forum for top-level authorities responsible for all intelligence programs (DCI and DEPSECDEF) to discuss and resolve issues of mutual interest. If the issue of intelligence support to new weapon systems is important to these decisionmakers, then this forum can define intelligence support alternatives and associated costs that should be considered by the JROC and DAB. Moreover, because one of the top-level authorities for weapon system acquisition participates in the Joint Review, this option can provide adequate information to the DAB on weapon system versus intelligence support trade-offs. However, because top-level military authorities do not participate in this option, the effects of intelligence on operations are explored on the margin. The overall assessment is satisfactory.

Obviously, combinations of these options could be structured or other options defined. For example, the JWCAT or the expanded ISP could be coupled with the Joint Review or the MIB+. If properly structured, such combinations should provide satisfactory information to the JROC and DAB. This assumes that an analytical structure is developed that allows rational trade-offs between weapon systems, alternative levels of intelligence support, and operational concepts.

Observations

- An improved JROC/DAB is the proper forum for making trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts
- Two factors are required to make the JROC/DAB an effective forum for those trades:
 - Accurate and authoritative information on operational needs and the capabilities and cost of intelligence and weapon system options
 - Decisionmakers willing to make the necessary trades
- Two or more approaches may be used to provide accurate information to JROC/DAB, but none will work if decisionmakers do not have incentives to make the trades

The JROC and DAB include the top-level decisionmakers of the DoD requirements and acquisition process. With authoritative information on existing and planned national intelligence capabilities and incremental costs to DoD for operating existing assets in new ways or adding requirements to planned capabilities, we believe an improved JROC/DAB is the proper forum for making trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts.

To be effective, the improved JROC/DAB must have accurate and authoritative information on operational needs and on the capabilities and costs of alternative weapon concepts and intelligence support alternatives. It must be supported by an analytical framework (procedures, models, and personnel) that examines effectively rational trade-offs between weapon designs, alternative levels of intelligence support, and operational concepts. More importantly, the improved JROC/DAB must have decisionmakers who are willing to make the necessary trade-offs.

The existing JROC/DAB may be improved by one or more options; among those with good potential are the expanded ISP, the JWCAT, and the Joint Review, or a combination of JWCAT with the Joint Review or the

MIB+.¹³ But none of these options will work if decisionmakers do not have incentives to make the necessary trade-offs; presumably, current budgetary constraints now offer such incentives. It will be difficult to arrive at an optimal solution because of the different perspectives of the communities involved (operations, acquisition, and intelligence), but now is the time to improve the process, by selecting one of the options listed above or another option not described, as long as the option provides decisionmakers with the necessary information and analytical support to make the required trade-offs and enough built-in flexibility to evaluate rapid and unexpected military and geopolitical changes.

¹³It appears that there is a current effort to implement one of these combinations. During the preparation of this report, we became aware of an initiative by the Director of the Defense Intelligence Agency to enlist analytical support from the federally funded research and development centers to assist him and the MIB in their support of the various JWCATs (Clapper, 1994).

BIBLIOGRAPHY

Clapper, Jr., Lt. Gen. James R., USAF (Director of DIA), *Federally Funded Research and Development Center Support*, Memorandum for the Under Secretary of Defense for Research & Engineering, Defense Intelligence Agency, U-28,149/C-FM2B, 19 August 1994.

Congress, *National Security Act of 1947* (50 U.S.C. 401 et seq., July 26, 1947), as amended by *Intelligence Organization Act of 1992* (Public Law 102-496, Sec 701 et seq., 24 October 1992).

Defense Intelligence Agency, *Intelligence Support for Defense Acquisition Programs*, DIA Regulation 55-3, 30 March 1992.

Defense Mapping Agency, *DMA List of Standard Products and Services*, DMAL 8052.4, August 1990.

Department of Defense, *Defense Acquisition*, DoD Directive 5000.1, February 23, 1991. Commonly referred to as DoDD 5000.1.

Department of Defense, *Defense Acquisition Management Policies and Procedures*, DoD Instruction 5000.2, February 23, 1991. Commonly referred to as DoDI 5000.2.

Department of the Air Force, *Intelligence Support to the Weapon Acquisition Process*, Briefing Charts, February 1992.

Department of the Air Force, *The Air Force Intelligence Counterpart Officer (ICO) Handbook*, 22 March 1993a.

Department of the Air Force, *Acquisition Management Policies and Procedures*, AF Supplement 1 to DoD Instruction 5000.2, 31 August 1993b (see Part 7, Section C, "Infrastructure Support").

Department of the Air Force, *Intelligence Support to the Air Force Acquisition Process*, AF Instruction 14-208, 21 March 1994a.

Department of the Air Force, *Air Force Mission Needs and Operational Requirements: Guidance and Procedures*, AF Instruction 10-601, 31 May 1994b.

Department of the Air Force, *A Joint Enterprise: Targeting Support for Standoff Weapons*, Briefing Charts, June 1994c.

Deutch, John (DEPSECDEF), *Defense Intelligence Executive Board (DIEB)*, Memorandum for Secretaries of the Military Departments, Chairman

of the Joint Chiefs of Staff, Under Secretaries of Defense, Comptroller of the Department of Defense, Assistant Secretaries of Defense, General Counsel of the Department of Defense, Assistants to the Secretary of Defense, and Directors of the Defense Agencies, 14 May 1994a.

Deutch, John (DEPSECDEF), *Joint Military Intelligence Program (JMIP)*,

Memorandum for Secretaries of the Military Departments, Chairman of the Joint Chiefs of Staff, Under Secretaries of Defense, Comptroller of the Department of Defense, Assistant Secretaries of Defense, General Counsel of the Department of Defense, Assistants to the Secretary of Defense, and Directors of the Defense Agencies, 14 May 1994b.

Director of Central Intelligence, *Intelligence Community Executive Committee*, Director of Central Intelligence Directive 3/2, 1 June 1992a.

Director of Central Intelligence, *Community Management Staff*, Director of Central Intelligence Directive 3/3, 1 June 1992b.

Hura, Myron, and Gary McLeod, *Route Planning Issues for Low Observable Aircraft and Cruise Missiles: Implications for the Intelligence Community*, RAND, MR-187-AF, 1993a.

Hura, Myron, and Gary McLeod, *Intelligence Support and Mission Planning for Autonomous Precision-Guided Weapons: Implications for Intelligence Support Plan Development*, RAND, MR-230-AF, 1993b.

Hura, Myron, and Gary McLeod, *Producing Target Models at a Central Facility: Assessment Methodology*, RAND, MR-425-AF, 1994.

Joint Staff Director for Force Structure, Resources, and Assessment (J-8), *Joint Warfighting Capability Assessment: Strike*, Briefing Charts, 21 June 1994.

Longuemare, R. Noel (PDUSD(A&T)), *Targeting Support for Standoff Weapons*, Memorandum for Secretaries of the Military Departments (Attn.: Service Acquisition Executives), Vice Chairman Joint Chiefs of Staff, and Assistant Secretary of Defense for Command, Control, Communications & Intelligence, 11 April 1994a.

Longuemare, R. Noel (PDUSD(A&T)), *Intelligence Support to Weapon System Acquisition*, Memorandum for Assistant Secretary of the Army (Research, Development, and Acquisition) and Assistant Secretary of the Navy (Research, Development, and Acquisition), 2 August 1994b.